CLAIMS

What is claimed is:

1. A method for trading IP bandwidth in an exchange system comprising a trading server and a trading arbiter connected to a trading switch, said method comprising the steps of:
    a. registering one or more destination network parameters of each member's network with a trade route registry, accessible by the trading arbiter, in order to facilitate the identification of a member's routes.
    b. receiving, at the trading server, buy orders and sell orders from respective buying and selling members for IP bandwidth and storing the buy orders and sell orders in an order database, each of the orders including a destination network parameter;
    c. matching buy and sell orders based on the destination network parameter and generating a list of one or more matched buy and sell orders as a trading result; and
    d. communicating by the trading server the trading result to the matched buying and selling member networks using border gateway protocol announcements so that said matched buying and selling member networks may configure their routes between the matched buying and selling members .

2. The method of claim 1, further comprising the step of settling the bandwidth trades between members based on usage of the bandwidth by a buyer member.

3. The method of claim 1, wherein each of the orders includes further parameters comprising price, quality, and capacity, said step of matching comprises matching buy and sell orders based on each of the parameters.

4. The method of claim 1, wherein said each of the orders includes further parameters comprising type of IP address prefixes to buy, said type of IP address prefixes being customer, peer, transit or specific IP address prefixes, and said step of matching comprises matching buy and sell orders based on each of the parameters.

5. The method of claim 1, further comprising the step of setting up participating members before said step of receiving buy orders and sell orders by connecting a member router of each participating member to the trading switch connected to the trading server, performing a route analysis of IP traffic through each of the member routers, and saving results of the route analysis in a quality database accessible by the trading server.

6. The method of claim 1, wherein said step of performing route analysis includes analyzing test messages sent through member networks.

7. The method of claim 2, wherein said step of trade settlement comprises using a sampling technique for a sampling period to determine number of bits per second sent from a buying member's network to a destination in a selling member's network.

8. The method of claim 5, wherein said step of setting up comprises generating a list of customer IP routes connected to a network of a member when the member is a seller and giving the list, via an external gateway protocol, to the trading arbiter for storage and recall.

9. The method of claim 1, wherein said step of generating a list of one or more matched buy and sell orders as a trading result further comprises verifying, by the trading server, buyer port capacity at a switch connected to the trading server and adjusting the available port capacity of the buyer and seller.

10. The method of claim 5, wherein said step of performing a route analysis comprises periodically validating the quality of the network of each member using quality measurement by one of a third party and the trading server and updating the quality database as required.

11. The method of claim 1, wherein each of the orders includes further parameters comprising price, average latency, packet loss, network distance, minimum

bandwidth block, traffic type, delivery period, order type, member ID, and protocol type.

12. The method of claim 1, wherein said step of matching comprises matching buy and sell orders based on at least one of optimal performance and price.

13. The method of claim 12, wherein said step of matching comprises matching buy and sell orders based on a combination of optimal performance and price selected by the member.

14. The method of claim 12, wherein said step of matching comprises matching buy and sell orders based on optimized performance only.

15. The method of claim 1, wherein said step of updating comprises updating border gateway protocol announcement for the member routers of the members by the member in response to information about the trading result received from the trading arbiter.

16. The method of claim 7, further comprising the step of collecting usage statistics from a member network so as to compare actual usage information to the usage information of the trading result.

17. An exchange system for trading IP bandwidth, comprising a trading server connected to a switch, said switch being connectable to member routers for receiving buy and sell orders for IP bandwidth from the member routers of members, said trading server comprising a trading platform having an order database for storing the buy and sell orders and a quality database for storing quality characteristics of member networks determined by route analysis, each of the buy orders and sell orders including a destination network parameter, and said trading server generating trades by matching buy orders and sell orders based on the destination network parameter; and a trading arbiter to register and store member IP address prefixes of the member routers and to implement the trades.

18. The system of claim 17, wherein said trading server further comprises a route analyzer for determining network prefix quality for each of the matched buy and sell orders.

19. The system of claim 17, wherein said trading server further comprises a settlement platform for billing based on usage statistics of the members.

20. The system of claim 17, wherein said trading server further comprises a trade order platform for receiving, storing, and matching the buy and sell orders.

21. The system of claim 17, wherein said trading arbiter comprises a route server for receiving and distributing destination network parameters to members for the trades using BGP.

22. The system of claim 17, wherein said trading arbiter further comprises a trade route registry for registering and storing all IP routes announced by the members and their routing policies.

23. The system of claim 17, further comprising at least one member router connected to said switch, said member router connected to a member device including an access manager and an interface between said member device and said switch, said interface transmitting said buy and sell orders to the trading server, wherein said buy order and sell orders are one of manually input to said interface and automatically generated by said access manager.

24. The system of claim 23, wherein said member router is for a buyer member, said trading server comprising means for determining a list of matching sell orders in the order database which meet the destination address parameter of the buy order of the buyer member, said access manager comprising means for selecting a sell order from the list of matching sell orders based on at least one of performance and price.

25. The system of claim 24, wherein said means for selecting comprises means for selecting a sell order from the list of matching sell orders based on performance and price.

26. The system of claim 17, wherein the trading server comprises a first trading server connectable to member routers in a first internet exchange, said system further comprising a second trading server connectable to member routers in a second internet exchange, said second trading server comprising a trading platform having an order database for saving the buy and sell orders and a quality database for saving IP traffic profiles of members determined by route analysis, each of the buy orders and sell orders including a destination network parameter, wherein said first trading server matches buy and sell orders based on the destination network parameter from its own order database and the order database in said second trading server.